APPENDIX C: ASSESSING THE CONSEQUENCES OF PUBLIC POLICIES PROMOTING RENEWABLE DEVELOPMENT

A. Introduction

The choice among policies to promote renewable energy development necessarily involves some assessment of the consequences of the options under consideration. These consequences include both the direct benefits and costs of substituting renewable energy for other energy sources as well as less direct effects (e.g., economic efficiency, competition, distributional effects among regions and customers) associated with this substitution.

The purpose of this appendix is to identify some of the consequences of implementing public policies designed to promote renewable energy development. No attempt is made to either evaluate these consequences or to suggest how these consequences should be weighed in a public decision process.

B. Identifying the Alternatives

An essential first step in assessing the consequences of any change in public policy, including changes designed to promote renewable energy development, is to identify the alternatives. The proposals described in the text are a good place to start. A base case alternative of no change in present policy to promote renewable energy development also allows for all proposals to be compared against one specific alternative.

C. Predicting the Consequences

The consequences of the various proposals include both the direct costs of implementing the proposal, the costs and benefits commonly associated with the substitution of renewable energy for non-renewable energy sources, and the broader consequences noted above. As described in greater detail below, the consequences, including both benefits and costs, associated with the substitution of renewable energy for non-renewable energy sources include environmental quality, resource diversification, price stability, economic development, public health and safety, and national security.

In assessing the various consequences, short-term and long-term consequences must be weighed. For example, public policies supporting renewable energy development today may result in future cost reductions. The assessment of these policies and the choice among policies necessarily weigh today's costs against tomorrow's benefits. Differences in the implications for local, regional, national, and world-wide communities and for different types and classes of customers should also be considered. Policies to reduce CO2 emissions will have potentially global implications; the costs of state policies will generally fall on electricity consumers in California but may also have implications for local areas as well.

D. Direct Costs

The direct costs associated with implementing public policies to promote renewable energy

development include: (1) compliance costs and (2) administrative costs. Compliance costs are the direct out-of-pocket costs required to meet the requirement. Administrative costs include the costs incurred by all market participants resulting from the adoption of a specific proposal.

To further illustrate, compliance costs for the minimum renewable purchase requirement (MRPR) proposals are the costs of purchasing renewable energy credits (RECs). These costs are directly related to the difference in costs between renewables and the competitive alternative (e.g., alternative marginal energy resource). Compliance costs for the surcharge proposal are the costs imposed on electricity customers by the surcharge.

Administrative costs are incurred both by the administrative agency and by other market participants, including renewable energy developers, retail providers, utility distribution companies (UDCs), and possibly customers. For the MRPR proposals, the RECs earned by renewable energy developers need to be created and the obligations on retail providers and the UDC need to be defined. On an on-going basis, these RECs are to be traded and retail providers and/or the UDC will provide RECs to the appropriate body to meet the requirement. For the surcharge proposal, the revenues will need to collected and then allocated to renewable energy developers.

E. Consequences

Over the past ten years, a number of studies have attempted to assess the implications of substituting renewable energy resources for other energy sources. Consequences frequently identified include: environmental quality, public health and safety, resource diversification and price stability, economic development, and national security. Before these consequences are briefly described, it should be noted that the implications of substituting renewable energy resources for other energy sources will depend on the specific renewable technology (e.g., hydro, solar, wind, geothermal, and biomass) and the energy sources that are being replaced by renewables (e.g., coal, gas, nuclear, and energy efficiency).

A number of specific environmental consequences need to be addressed in an assessment of renewables policies. Some of the consequences that have been ascribed to renewable energy development include: changes in local pollutant air emissions (e.g., NOx, particulates, carbon monoxide, hydrogen sulfide, metallic compounds, etc.), decreases in SO2 emissions and acid rain deposition, decreases in CO2 and other global warming gases, improved water quality adjacent to non-renewable energy plants, disruption of sensitive habitats and anthropoligical sites, increases in noise at remote sites, and land subsidence from geothermal energy production. The assessment of these various environmental consequences needs to take into account the implications of existing environmental regulations. For example, with an emissions trading program, such as the NOx trading program developed by the South Coast Air Quality Management District known as RECLAIM, reductions in NOx emissions associated with the substitution of renewable energy sources for non-renewable energy sources will not result in a net decrease in NOx emissions subject to the cap established for RECLAIM.

Public health and safety is a major concern and a possible consequence resulting from the substitution of renewable energy for other energy resources. Decreases in local pollutant air emissions generally result in improvements in public health while increases have the opposite effect. Public health and safety is also benefited from reductions in wildfires associated with forestry management techniques attributable to solid fuel biomass. Other examples include

possible interference with air transportation by wind and solar thermal facilities, added risks to workers due to the release of toxic gases from photovoltaic, biomass, and geothermal facilities, and risk of accidents associated with coal-mining, thermal generating faclities, and storage of nuclear fuel.

Resource diversification and price stability is another possible consequence to be addressed in an assessment of renewables policies. Generally, renewables are viewed as a form of insurance against disruptions in fossil fuel sources and new regulations restricting CO2 emissions. Renewables also provide an alternative and thereby limits the price increases associated with other non-renewable energy sources.

Economic development is influenced by changes in the number, type, and distribution of jobs. Substitution of renewable energy for other energy resources may increase jobs in one area while reducing jobs in other areas. In assessing the implications of these proposals on job creation, the effect on existing jobs in the area with the other energy resources should not be overlooked.

Enhanced national security is generally viewed as an additional benefit associated with renewable energy resources. The ability to substitute other energy sources for imported oil limits the ability of any group of producers, such as the Organization of Petroleum Exporting Countries, to restrain supplies and drive prices up. Renewable energy sources do have the potential to substitute for oil in the supporting electric transportation (e.g., photovoltaic charging stations for electric vehicles). For developing nations, increased use of renewables may also promote economic development by reducing demand on foreign exchange accounts. This consequence, of course, depends on the costs associated with renewable technologies.